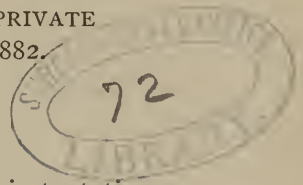


Nelson (A.W.) Respects of A.W.N.

VERATRUM VIRIDE IN TYPHOID FEVER.

ITS LOWERING OF THE PULSE AND TEMPERATURE—
TWENTY-EIGHT SUCCESSIVE CASES IN PRIVATE
PRACTICE, ALL RECOVERING. 1873-1882.

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THE treatment of every disease at first is tentative and theoretic,—fortunate if at last it becomes in a rational sense specific or uniform. It varies in its methods, even with a common theory, to say nothing of many theories. For a decade, accepting the excess of heat as the measure of chemical and destructive changes, and as the chief cause of death in a disease so prolonged as typhoid fever, how many remedies have been tested!—digitalis, quinine or calomel in heroic doses; veratria, described by Ziemssen, given to induce vomiting and sudden lowering almost to collapse, in the hope that the high fever may not return; and the cold-bath cure. Before the use of the thermometer, there were the anti-bilious treatment, the turpentine for the enteric symptoms, the empirical acid course; and, after all others, the expectant method.

We note the unsatisfactory character of these treatments by their indifferent interchange, by the liberty of experiment within certain limits, and by the result—a constant percentage of fatality.

It has long since come to this: We must take *care* of our cases, guard against injurious medicines, diets, excesses, and

oversights, and await an unknown termination. The disease, self-limited—if its subjects live long enough!—must exhaust itself any way, unimpeded by human effort.

But a cure for this fever should be found, in the same sense specific as quinine in intermittents, salicin in rheumatism, mercury in syphilis, arsenic for the skin, the bromides in epilepsy, or digitalis in diseases of the heart.

Our art should not be thought entirely out of its infancy when a disorder so fatal, without antidote, ravages the whole world. And the prolonged course of the disease should be a reason and a means of cure, not a cause of despair and inaction.

There was an axiom accepted, but quite disgraceful,—the cure of rheumatism is six weeks. No longer excusing ourselves in such failure, in the better sense now we say, we cure rheumatism.

Veratrum viride, green hellebore, was first brought to the notice of physicians by Professor Wm. Tully, of Yale College, in his lectures to his classes about 1830, as a substitute for *colchicum* in rheumatism and gout. He claimed it would cure a majority of the cases of these diseases, being “separated medicinally” from *veratrum album* and much less cathartic, also less so than *colchicum*. Dr. Chas. Osgood, of Providence, who first published a full account of the drug, *Amer. Jour. of Med. Sciences*, vol. xvi, p. 296, old series (1835), had his first knowledge from Prof. Tully. He advises its use in pneumonia, rheumatism, and gout.

Norwood, *Am. Jour. of Med. Sciences*, vol. xxv, page 281, 1853, is the first to allude to typhoid fever. He says: “We have treated several cases of typhoid fever in council (with *verat. v.*), where all the usual remedies had failed.” * * *
“Medicine of every kind whatever was withdrawn, and she (the patient) was put on the use of the tinct. of *v. v.*, com-

mening with three drops, to be increased every three hours." The case improved soon and recovered, though from the text it seems to have been desperate. Norwood continues: "If this were a single or isolated case, we would not have mentioned it, but we have treated a number of cases with a like effect and success." In this case, he had vomiting, and in the others also. He objects to the giving of quinine and stimulants with the medicine.

Ringer says, fourth edition, 1875: "Typhoid fever, it is said, may be beneficially treated by veratrum," and "in the treatment of the foregoing diseases"—scarlet fever, measles, typhoid fever, etc.—"it is better to give small doses, as one or two minims every hour, rather than larger ones at longer intervals,"—the true way.

Barker, of New York, advises veratrum viride in quite large doses in puerperal fever. Agnew, of Philadelphia, in drop or two-drop doses in surgical fever; and Simpson, of Edinburgh, 1872, in the former disease, with some discourse on the helleborism of Hippocrates and the ancients, with which cure he classes this. Their hellebore was a cure for chronic diseases mostly, as insanity, epilepsy, neuralgia, dropsies,—a "separate" drug, yet near kin, botanically, to the v. v.

The Woods, of Philadelphia, and Stillé, and Bartholow, latest, advise against it, the last two being very sure of injurious effects. Stillé is contemptuous as to its use in typhoid. Dunglison and J. K. Mitchell, scarcely mention it.

Flint, Aitken, Reynolds, Bennett, Graves, Chambers and Niemeyer, do not class it with remedies for fever.

Up to 1873, I had only used veratrum viride in three thoracic aneurisms, one with a supposed cure and a relapse. I have never used it in pneumonia. In 1874, in the cases herein reported, this line of thought occurred to me.

High temperature, prolonged two or three weeks, kills.

Personal and recorded experience has only this lesson, spite of quinine, stimulants, effervescents, acids, cold baths. Now, if the pulse could safely, in this fever, be reduced from 110, or from 120, which, continued two or three weeks in adults, is usually fatal, to 90, and safely kept at 90 or 85—not at 70 or 60,—the friction of the heart and of the whole circulation one might expect would be lessened, in so considerable degree that the heat would naturally fall somewhat, at least. Just as in the dangerous friction of continuously running a steamship greatly beyond her normal rate of speed, every two or three additional miles per hour increases consumption of fuel geometrically, or by the square—not by simple addition,—and the friction of machinery and breakage are in the same proportion. Nor is the comparison untruthful. Consumption of material fuel, in each case, that of the living body and of the ship in motion by steam, are identical—the use of oxygen also. Breakage or exhaustion may be final in either.

Prevention of high heat is, however, very different from the abstraction of heat, by the cold bath.

Possibly this *veratrum*, considered depressing, as usually given, in a prolonged disease, otherwise given, as already intimated, only lowering the pulse to eighty-five or ninety, might benefit; and, by keeping down the heat a degree or two continuously, mitigate some or all symptoms and save life.

Besides the poison or ferment of the fever, we contend against its prolonged effects after incubation—rapid circulation, high heat, and inflammatory processes. The poison without these might not interfere dangerously with the physiological functions. Even if we could not antidote the ferment or poison, we might antagonize the effects and delay death till *vis naturæ* could restore the normal economy or eliminate the faulty product. The excessive friction of the fever at least we might try to obviate. The attempt is to mollify, not to abort or strangle, the disease.

The records thus anticipated are somewhat brief, but the pulse and temperature and worst symptoms besides, are fully given.

What was found? The skin was frequently moist, in some cases constantly, so that a somewhat natural bath followed, with its tendency to coolness; the tongue moist, a possible result of the respiration being more nasal, without the sordes often so irksome and significant.

Sleep has usually been quite natural, to be expected with the improvement of the skin and tongue. No faintness, no increased weakness as was anticipated; the patient permitted to have his head on the usual pillows, not especially low, as Stillé says; no vomiting, except in two or three instances, not necessarily to be attributed to the drug; no dangerous symptoms whatever seem to follow these small and frequent doses. Instead, a mitigation of the fever, of the cerebral symptoms, and of the abdominal, the stomach retaining nourishment well. The pulse is slowed, the temperature lowered one or two degrees very often in the second week. Rose-spots have infrequently been observed or have been doubtful. What is of more consequence, the complication of hemorrhage of the bowels, or of perforation, has not occurred.

The opinion obtains with me that the ulceration of Peyer's glands is aggravated greatly by the rapid circulation and high heat as usually prolonged, and that this desirable result of lessened friction and lessened heat, together with the slight tympanitis, the prevented diarrhœa, and the improved tongue during the second week, gives us another type of fever, one non-typical.

The usual diarrhœa, under other treatments, must be thought a result of the prolonged high heat, a means of elimination of waste and of the poison generated—conservative in some degree, at least. So is the colliquative diar-

rhœa of phthisis. In that we have also sweating. In both cases there is great heat. Reduce the heat in either to nearer normal, and the diarrhœa is no longer troublesome. Again, ulceration in both instances brings on diarrhœa, and high heat increases ulceration.

In typhoid with slow pulse the high temperature is also reduced and the general symptoms improved by the veratrum, in these moderate doses, without reference to the pulse.

Convalescence has uniformly been rapid.

New London has a general incline eastward toward the Thames, a river having deep currents and ocean tides. The city is most abundantly flushed with pure water from a beautiful lake, a reservoir formed by nature, seven miles distant among hills. Till within three years, there have been no proper sewers, and since, in only a few streets. Vaults and cesspools are stone-walled, not cemented ; and the soil or subsoil, too commonly infiltrated, in many places rests upon granite ledge. Cellars, of course, are sometimes polluted. The great quantity of water increases the danger, and often the vaults overflow.

The city-limits, the smallest in the State, if not in the nation, with four fifths of the population in the northern fourth, 9,000 in one square mile, crowd the dwellings too close to these imperfect receptacles. It should be anticipated that here is a very nest of typhoid, diphtheria, and its congeners.

For the past three years only, the ventilation of vaults and the trapping of sinks have been required by law ; and sulphate of iron has been freely used. Otherwise there has been little of sanitary precaution.

For the ten years during which my observations were made, there has been no epidemic of typhoid, but a severe one of scarlet fever in 1879, and of diphtheria, eighty-seven

deaths in 1880, and many cases of the latter for several years previous, and high death-rates. Yearly, there have been reported two to five deaths from typhoid, thirty-four in all. Some recoveries by other treatments have been very tedious. The entire population is 11,000.

Brief reports convey impressions of a mild type, of continued, of "two weeks" or "bilious" (?), fever. But the common cause, as far as we know, the termination, even in the mild type, too often disastrous, prevalence in the autumn or near to the autumn, bring many varieties under one species. These are all typhoid, with all its occasional dangers and complications. And in my patients, the bodily weakness, absence of appetite, the deafness, coma-vigil, and facies were characteristic, as also the pulse and temperature. Warnings from medical men and expressions of doubt most frequently accompanied statements of cases during their progress to recovery. Surgeon M. C. Drennan, U. S. Navy, in 1880, saw several patients, however, with approval and great interest.

All treated from the first, with any degree of thoroughness according to the method, are given. The preparation used is the officinal tincture, and the doses are from one to two drops per hour, with little other medicine, if any, from the setting in of the disease to convalescence. Age and sex must be considered, but children require a dose proportionally large.

The elimination of *veratrum viride* is rather rapid, so that these patients were usually under the influence of from three to twelve drops continuously. It occurred sometimes that the medicine was given only every two hours at night. The entire quantity in twenty-four hours would be from twenty to forty-eight drops; and this would go on day after day for ten, twelve, or fourteen days. By no means is the dose unappreciable.

The experience recorded here is sufficient to guard from disaster any physician following these methods. He should, of course, watch carefully the pulse and temperature. In medicines we do not chiefly regard names, and the results of careless or excessive doses. This powerful drug, reasonably exhibited for our special purpose, is not then depressing or dangerous. It is admitted that arsenic and mercurials are sometimes tonic and restorative. Yet mere names alarm our patients, and we yield to their timid scruples to our common disadvantage. The ordinary classifications of drugs are often, in this way, a great damage in our practice—bugbears.

Three questions are pertinent. Does the veratrum in these doses reduce the temperature one or two degrees, morning and evening, during the second week?

Is convalescence at the twelfth or fourteenth day a frequent result of the treatment?

Does the cure render the fever non-typical and less malignant in a great degree?

My own conclusion may be thus stated.—A tendency of the typhoid ferment to exhaust itself at about fourteen days the veratrum viride emphasizes, so that very many cases determine at twelve days, some at fourteen or fifteen, a smaller number at three weeks. Very few determine indefinitely, as do a large proportion in other treatments.

The pulse and temperature and memoranda, all recorded at the time of visit, may be taken as accurate, the thermometers being proved. The application of this instrument was almost always in the axilla.

REGIMEN.

Stimulants.—Essentially none. A little brandy or whiskey in cases 8, 17, and 25 only.

Diet.—Milk porridge, oatmeal porridge strained, milk,

beef tea, weak tea or coffee; orange juice in slight quantity; sometimes a little lemon juice.

Rest, etc.—Horizontal posture, upon back or side, both being advised at intervals. No visitors except the family and those needed. An airy room; a window frequently opened; temperature 65°. Occasional baths of vinegar and water, etc. Mouth, tongue, and teeth to be kept as clean as possible. The excreta disinfected.

1873.

CASE 1.—Miss C., age twenty. Fever. Oct. 29th to Nov. 13th inclusive, visited till thought convalescent. 22d, “relapse or phthisis acuta (?) R.: Tr. cinchon. co. et gentian. co., āā (?) mix; 3 i three times a day.” 27th, “pulse 130; v. v., gtt. ss hourly.” 30th to Dec. 6th, “pulse 125 to 130. Sibilant and moist râles. No cough.” Daily visits. “R.: Tr. v. v., gtt. ii every two hours. Pulse reduced to 100. Comfortable. Milk diet.” Much emaciation. Dec. 8th to 19th, v. v. and diet continued. “Improving. Pulse 100. Râles disappearing.”

An unexpected recovery was complete, and was ascribed doubtfully to the v. v. 1882, still in good health.

CASE 2.—McC., girl, eight years of age. Coma-vigil, etc. Oct. 4th, pil. hydrarg., gr. iiss. Cold sponging till 6th.

1874.													
October	4	5	6	7	8	9	10	11	12	13	14	15	16
Day	1	2	3	4	5	6	7	8	9	10	11	12	13
Pulse { M.	100	100	100	100	100	80	60	60	55	60	60	60	60
E.	100	100	100	100	100	65	60	80	60	80	80	80	80
Temp. { M.	103°	103°	103°	103°	103°	101°.	100°.	99°.	99°.	98°	98°	98°	98°
E.	104	105°	105°	105°	104°.	102°.	101°.	102°.	102°.	102°.	102°.	101°.	102°
Dejecta	.	4	.	.	.	1	.	.	.	.	.	.	.
Tr. v. v., gtt.	.	.	.	12	18	10	8	8	8	8	.	.	.
Tr. acon. r. gtt.	.	.	.	6	9	5	4	4	4	4	.	.	.

Case. 3.—Oct. 8th, Daniel P., colored, age nineteen years. To Oct. 15th, inclusive, fever. V. v., gtt. iss., hourly. Convalescent in seven days.

CASE 4.—Robert B., barber, age twenty years. Oct. 23d, not well for four days. No appetite. Headache. P.M.: pulse 100, 70, 60, 70. T. 103°.3, 102°.2, 103°.8, 103°.5, 102°.5; till Nov. 1, 101°.6. V. v., gtt. 15 and 20, daily, 23d to 28th. Mild case. Nov. 2d, convalescent.

CASE 5.—Nov. 1875. College student, age twenty. Fever. Pulse rapid. Temperature 102° and 103°. V. v. only. No complication.

CASE 6.—Vallie L., age seven. Bad privy-vault. Aug. 9, 1876. Fever. R. hydrarg. subchlorid. gr. iss and pulv. rhei. 10th, repeat calomel. 11th, ol. ricini, $\frac{2}{3}$ ss.

August	9	10	11	12	13	14	15	16	17	18	19	20	21
Day													
Pulse { M.	100	90	100	110	120	115	100	100	90	100	95	90	90
E.	90	95	110	110		90		100	90	95	100		95
Temp. { M.		99°	101°	102°	102°	102°. ₃	102°. ₅	102°	101°. ₂	101°. ₅	100°	99°	98°
E.	101°	101°	104°	104°	104°	103°	104°	103°. ₅	103°	103°	103°	101°. ₂	98°. ₃
Dejecta	1			2						2			
V. v. gtt.				18	24	24	24	24	24	24	24	24	

Convalescence undelayed.

1877.

CASE 7.—John W., age twenty. Ice fouled by sewage used in drinking-water. V. v. only. Convalescent in ten or twelve days.

1878.

CASE 8.—Mrs. B., widow, age forty-three. For some months in poor health from grief, etc.

Aug. 15th. Fever. R. : hydrarg. subchlorid., gr. i, and magnesiae calcinatæ. Record tabulated till twenty-third day. Mind usually clear. Much weakness, however, during entire sickness, and apprehension. Though temperature did not rise above 100° or 100°.₃ after twenty-third, convalescence was delayed four weeks. The pulse was usually weak. Quinine was given moderately, late in the case. The veratrum was given, perhaps too timidly. Aug. 31st, a day or two, ol. terebinth., gtt. xx., daily.

August	15	16	17	18	19	20	21	22	23	24	25	26
Day		1	2	3	4	5	6	7	8	9	10	11
Pulse { M.	100			100	100	95	100	90	85	85	90	90
E.		100	100		100	100	100		85	90	95	90
Temp. { M.	101°. ₇			103°	103°	102°	102°. ₆	101°. ₈	102°. ₅	101°. ₅	102°. ₈	101°. ₈
E.		103°. ₆	103°		103°	102°. ₆	102°. ₈		102°. ₄	102°	102°. ₈	102°. ₄
Dejecta	2			15	2	3	3	1	1	2	2	3
V. v.					12	12	12	12	12	12	8	18
Brandy					$\frac{2}{3}$ i	$\frac{2}{3}$ i	$\frac{2}{3}$ i	$\frac{2}{3}$ i	$\frac{2}{3}$ i	$\frac{2}{3}$ i		

CASE 8.—Continued.

August	27	28	29	30	31	Sept. 1	2	3	4	5	6	7
Day	12	13	14	15	16	17	18	19	20	21	22	23
Pulse { M.	90	85	90	90	100	95	95	95	95	90	90	
E.	90	95	105	100	100							90
Temp. { M.	101°. ₄	100°. ₅	101°. ₂	100°. ₆	100°. ₆	100°. ₁	100°	99°. ₄	100°	100°. ₂	100°	
E.	102°. ₄	102°	102°. ₂	102°. ₂	102°. ₂		101°. ₄	101°. ₆	101°. ₄	101°. ₂	102°. ₂	100°. ₄
Dejecta		2	2	2	4				1*			
V. v.	18	18	18	18	18	18	18	18				

* Dejection normal.

1879.

CASE 9.—Bad vault, bad cesspool, bad sink. Mrs. F., age forty-five; fat.

Sept. 12th, R. : hydrarg. subchlorid, gr. iv. Sept. 13th, ext. pilocarpi, fl. 3 i., and tinct. aconiti rad., gtt. i, hourly. Perspired freely and vomited. Coma-vigil, etc., marked.

September	.	.	12	13	14	15	16	17	18	19
Day	.	.	1	2	3	4	5	6	7	8
Pulse	{	M.	100	100	105	110	90	100	100	90
		E.			110	95	100	90	100	
Temp.	{	M.	103°	103°	103°	103°	102°.5	103°	102°.8	102°
		E.	103°		104°	103°.5	103°.5	104°	103°	
Dejecta	.	.	.	.	.	.	.	.	.	.
V. v.	.	.	.	.	.	24	36	42	48	36

CASE 9.—Continued.

September	.	.	20	21	22	23	24	25	26
Day	.	.	9	10	11	12	13	14	15
Pulse	{	M.	100	95	100		100		
		noon							
Temp.	{	M.	102°	101°.5	102°			100°.2	
		noon				102°.4	101°.4		98°
Dejecta	.	.	3	3	1			1	2
V. v.	.	.	42	42	42	48	40	36	15

Convalescence immediate.

CASE 10.—Edwin F., age forty-eight ; stout. Bad vault. Sept. 16th, rigors. Himself advised and took six Lee's pills.¹ 17th, pilocarpus and aconite to sweating. Coma-vigil and delirium during sickness, and very marked weakness.

September	.	.	17	18	19	20	21	22	23	24	25	26	27	29	Oct. 1
Day	.	.	1	2	3	4	5	6	7	8	9	10	11	13	15
Pulse	{	M.	90	85	100	80									
		noon													
Temp.	{	M.	102°	101°.8	102°	101°.8	102°								
		noon													
Dejecta	.	.	102°.5	103°	101°.8	103°		102°			99°	99°.8	100°.3	100°	100°.2
V. v.	.	.	36	48	36	36	36	36	36	18	12	6	ol. ric.		99°.8

Oct. 4th, sitting up. Recovery immediate.

1880.

CASE 11.—John G. D., age four ; bright boy. June 5th, not well several days. In bed. Quick pulse, high fever. June 6th, ol. ricini, ʒ ss. Coma-vigil.

June	.	.	.	5	6	7	8	9	10	11	12	13	14
Day	.	.	.	1	2	3	4	5	6	7	8	9	10
Pulse—E.	{			120	115	115	115	115	115	115	110	100	90
				103°.8	104°.5	104°.2	103°.5	102°.2	103°.2	103°.2	100°	98°.6	
Dejecta	.	.	.	.	.	.	.	.	.	.	.	.	.
V. v.	.	.	.	.	6	18	18	18	18	18	18	18	12

CASE 12.—Joseph B., age twenty-three years. Basement house—hygiene and surroundings very bad. June 20th, tongue brown and dry. R.: hydrarg. subchlor., gr. iij. Constipation during sickness very marked, and ended with it. Recovery.

¹ Lee's pills = pil. cathartic. co.

June	20	21	22	23	24	25	26	27	28	29	30	July 1	2
Day	1	2	3	4	5	6	7	8	9	10	11	12	13
Pulse { M.	110	115			90								
E.			100	95		90	90	80	75	75	75	75	
Temp. { M.	102°				101° .8								
E.		103° .2	103° .2	103° .2	103°	103°	101° .8	101° .4	100° .2	99° .6	99°		
Dejecta													O. iv *
V. v.	18	32	36	36	36	36	36	24	24	24	12	3	
Ol. ricini				3 ss.		3 ss.		3 ss.	3 ss.	3 ss.	3 ss.	3 ss.	
Quinine							gr. vj.	gr. vj.	gr. vj.	gr. vj.	gr. vj.	gr. vj.	
Calomel	gr. iij											gr. iij.	

* Solid.

CASE 13.—Thomas S., age twenty-four years, bartender. Exposed to contents of sink-drain during removal, etc. House hygiene bad. Boards with case 9. Afternoon temperatures, 103°, or thereabout. Pulse, 80 only. V. v., gtt. xxiv, daily. June 22d to 29th, a good deal of bronchial trouble. Convalescence sudden and interrupted; eighth or ninth day.

CASE 14.—Lydia T., mulatto, age nine years. Surroundings very bad; disinfectants, etc., needed. June 30th, and July 1st, at school but ill; 2d, took pills; 3d, chilly, headache, diarrhœa—went to bed. During sickness, coma-vigil. At times, restless, legs drawn up, bowels tympanitic. Tongue dry and darkly coated for first week. Several nose-bleedings. July 5th, 6th, 7th, 8th: R.: hydrarg. subchloridi, gr. ii.; bismuthi subnitrat, \mathfrak{D} i; pulv. doveri, gr. viij. m. Chart. viij. A powder after each liquid movement, additional, to the v. v. This little black girl's case looked very badly. She recovered without an incident.

July	3	4	5	6	7	8	9	10	11	12	13	14
Day	1	2	3	4	5	6	7	8	9	10	11	12
Pulse { M.												
E.			120	120	120	120	110	105	100	105	105	100
Temp. { M.												
E.			120	125	120	120	110	105	110	105	105	105
Dejecta			102° .4	102° .3	102° .5	103°	101°	100° .7	99°	100° .6	101°	99° .9
V. v.			103°	104°	102°	103° .2	102°	100°	101° .4	101°	100° .8	99° .6
			4	6	4	4	5	4	1	1	12	12
			15	24	20	22	30	18	18	12	12	12

CASE 15.—Attended by Surgeon M. C. Drennan, U. S. Navy; myself in consultation. Harris L., age ten years, son of Dr. L., of Tenn. A brother sick of typhoid in Tenn., at the time, unknown to us. Harris was four weeks from home. Aug. 12th, not well for a week. Mother thinks he has been too much in salt water. Aug. 14th, pil. hydrarg., gr. v; 15th, quiniæ sulphatis, gr. vj. Coma-vigil, etc.

August	17	18	19	20	21	22	23	24	25	26	27	28	29
Day	2	3	4	5	6	7	8	9	10	11	12	13	14
Pulse { M.	100	100	95	95	85	100	95	110	105	80	95	90	90
E.	110	95	90	105	105	100	95	110	105	95	100	105	95
Temp. { M.	103° .5	103°	101° .5	102°	102°	101° .2	101°	102° .6	101° .6	100°	98°	99° .4	99°
E.	103° .3	102° .8	103° .6	102° .8	103° .6	103° .5	102° .8	103°	102° .9	102° .2	102°	102° .4	100° .6
Dejecta			1	1	2	3	2		1				
V. v.	12	20	24	24	24	28	32	36	40	24	8	4	4
Quinine	3	3	3	3	4	4	4	4	4	4	3 iss	3	4
Brandy or sherry											3 iss	3	4

CASE 16.—Virginia D., age fourteen years. House over a brook used to carry sewage. Sunlight shut off by high buildings, south and west. Delirious, etc. Very sick.

August	20	21	22	23	24	25	26	27	28	29	30	31
Day	3	4	5	6	7	8	9	10	11	12	13	14
Pulse { M.	115	100	110	90	80	95	80	70	80	85	100	80
E.	120	100	100	110	90	95	80	95	90	100	90	85
Temp. { M.	102°.5	102°.5	102°.2	101°.8	102°.5	102°.2	102°	101°.5	101°.2	100°.5	102°.7	98°.5
E.	103°.5	103°.5	102°.5	103°.6	103°.5	103°.4	102°.3	103°.2	101°	103°.4	101°.8	99°.5
Dejecta.	1	1	1	1	1	1	1	2	2	2	2	1
V. v.	30	36	42	34	30	42	36	36	36	24	36	1
Calomel or morphia								M. $\frac{1}{8}$		M. $\frac{1}{4}$	C. i	M. $\frac{1}{11}$

CASE 17.—Second case in house this season. Bad leak from privy-vault under window of sleeping-room. Foul odors.

Nellie M., age eighteen. Ordinary health delicate. Aug. 18th, not well for several days. Two Wright's pills. Seidlitz powder. 19th, chills, A.M. Ol. ricini, $\frac{3}{4}$ ss; tinct. aconiti rad., gtt. i, hourly. 20th, dysuria. Aconite continued, A.M. V. v., P.M. Coma-vigil, or delirium, with great restlessness. Twice escaped from bed. Weakness very marked. Diarrhœa. 7th, 8th, 9th, 10th, 11th, 12th, 13th days, R.: hydrargyri subchlorid., gr. i; bismuth. subnitrat, 3 ss; pulv. ipecac., gr. i; pulv. opii, gr. ij. m. Chart. xij. A powder after each liquid movement. V. v. being continued. Headache. Nasal bleeding. Tympanitis.

August	20	21	22	23	24	25	26	27	28	29	30	31	Sep. 1
Day	2	3	4	5	6	7	8	9	10	11	12	13	14
Pulse { M.	90	100	95	90	100	85	100	95	80	85	75	75	80
N.													
E.	100	90	90	100	90	80	90	95	95	80	80	85	80
Temp. { M.	101°.5	102°.5	101°.5	102°.8	102°.9	102°.8	102°.2	103°.2	101°.6	101°.3	101°	98°.5	98°.5
N.													
E.	102°.5	102°.5	102°.8	103°.6	102°.5	102°	102°.3	102°.6	102°.8	102°	101°.1	100°.5	2
Dejecta	3	4	4	4	3	4	5	6	3	5	4	6	
V. v., gtt.	12	32	42	36	42	30	24	36	24	24	30	15	
Quinine, gr.													
Chloral, gr.													
Brandy			$\frac{3}{4}$ ss			$\frac{3}{4}$ i	$\frac{15}{3}$ ii			$\frac{3}{4}$ ss	$\frac{3}{4}$ ss		

After Sept. 12th, convalescence without incident.

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CASE 18.—Fred. C., age thirteen. Delicate boy. Overflow of cesspool. July 3d, chills. 4th, afternoon, pulse 110; temperature 104°. Mother thinks he has worms. Santonin and calomel in small doses. 5th, P.M., 104°. 6th, 7th, 8th, "fever."

July	9	10	11	12	13	14	15	16
Day	6	7	8	9	10	11	12	13
Temp. { M.	102°.5		100°	99°	99°			
N.		102°.5						
E.	103°.5		102°	102°	102°	101°	100°	98°.5
V. v.	24	36	36	36	36	36	36	12

CASE 19.—Thomas E., coal-heaver, age forty-three. Bad sink,

pipe without trap goes to unventilated sewer, odor very bad, therefrom in the living-room. Aug. 6th, overworked and overheated. Aug. 11, in bed, headache, etc. Aconite, gtt. i hourly. Coma-vigil, etc.

August	11	12	13	14	15	16	17	18	19	20	21
Day	1	2	3	4	5	6	7	8	9	10	11
Pulse { M.	100				80		85				
{ N.											
{ E.		90	90	90	95		85	85	80	75	70
Temp. { M.	102°				103°		102°.7				
{ N.								102°	102°	100°.2	99°.3
{ E.		103°		103°.6		103°	102°.8				
Dejecta							1			1	2
V. v.		12	24	24	24	32	40	36	36	30	18
Calomel, gr. . . .	2						1		$\frac{1}{2}$		

CASE 20.—Geo. H., age twenty-five, steam-engineer. Aug. 11th. feverish two days. Ext. pilocarpi. fl., 3 i; tr. aconiti rad., gtt. i, hourly, and hydrargyri subchloridi, gr. ii, twice. Aug. 12th, P.M., pulse 100, temperature 104°. 13th, 14th, temperature 102°. 15th, P.M., 103°. After that, 101°. Pulse from 13th being 80; v.v., gtt. xx, daily. 23d, 25th, 27th, quinine, gr. vi. Malarial (?).

CASE 21.—Mary E., age twenty-six, single, nurse-maid. Aug. 13th, been ill a week or so about the house. Sleepless at night. R.: lithii bromidi, gr. v, nocte. 16th, for diarrhœa, R.: hydrargyri subchloridi, gr. ij; bismuth. subnit., 3 i; pulv. ipecacuanhæ, gr. i; morphiæ sulphatis, gr. i. m. Chart. xv. A powder after each movement. One powder, also, 17th and 18th. 22d and 23d, took tinct. opii, gtt. xx, and ol. terebinth., for diarrhœa. Coma-vigil, delirium, great weakness. Movements a few times without consciousness. Dejecta offensive.

August	13	14	15	16	17	18	19	20	21	22
Day	1	2	3	4	5	6	7	8	9	10
Pulse { M.										
{ N.					95		95	85		65
{ E.	100	100	100	100	110	105	80	90	65	85
Temp. { M.						103°	103°	102°	103°.2	
{ N.			103°		103°.7					102°.5
{ E.	103°	103°		104°.5	104°.8	103°.2	103°.7	103°	102°	103°.4
Dejecta				5	1	1		3	2	7
V. v.	8	20	20	24	30	36	40	42	36	20

CASE 21.—Continued.

August	23	24	25	26	27	28	29	30	Sep. 1
Day	11	12	13	14	15	16	17	18	20
Pulse { M.	80	80	70	90			85		
{ N.					75	70		75	85
{ E.	80	85	90	85					
Temp. { M.	101°.5	100°.2	101°	100°.7			99°.4		
{ N.					101°.4	100°.3		99°.2	
{ E.	102°	102°.8	102°	101°.6					99°.7
Dejecta	1	1	1	1		1	1	1	2
V. v.	30	30	24	30	24	20	18		

Sept. 5th, went home to Bridgeport against advice. No harm, however.

CASE 22.—Mrs. B., Swede, age twenty-eight. Acclimated. Eight years ago had ague. Her husband just recovering from a severe attack of typhoid. His pulse, though about the house, 115. Weakened heart. Quite as much trouble as she. He was treated with neutral mixture and quinine. Mrs. B. worn out taking care of him. Vault and cesspool and sink all bad. Coma-vigil, etc.

Oct. 11th, hydrargyri subchlorid., gr. iij; ol. ricini, tinct. aconiti rad., gtt. i, hourly, etc.

October	11	12	13	14	15	16	17	18	19
Day	1	2	3	4	5	6	7	8	9
Pulse { N.				95		90	90	85	
E.	90	85	85	90	90				95
Temp. { N.				102°. ₃		102°. ₃	103°. ₅	102°	
E.	102°. ₅	101°. ₅	103°. ₃	103°. ₃	103°. ₃				103°
Dejecta				2			1		
V. v.		12	30	14	24	24	30	32	32
Calomel, gr. . .	1½	1½							

CASE 22.—Continued.

October	20	21	22	23	24	26	28	30
Day	10	11	12	13	14	16	18	20
Pulse { N.				85				80
E.	80	80			85	90	90	
Temp. { N.				101°. ₂				98°. ₄
E.	102°. ₄	102°. ₃			102°	101°. ₅	101°. ₂	
Dejecta	1	1	1					1
V. v.	32	32	30	36	30	24	24	
Quinine						6	6	
Calomel, gr. . .						2	1	

Convalescence immediate.

CASE 23.—John M., age thirty-four, teamster. Sleeping-room, eleven feet square, had an untrapped sink connected with an un-ventilated cesspool; self, wife, and child occupied the room at night, without a window open. Oct. 17th, P.M., pulse 95, temperature 104°. With v. v., gtt. xxiv, daily, it remained, P.M., 102°, 101°, 100°, till it became 98°.6, Nov. 1st.

CASE 24.—Isadore M., age seventeen, clerk, delicate. Vault close to house, uncemented, foul.

Oct. 28th.—Rigors for several days. R.: hydrargyri subchlorid., gr. ijss. A.M. Ext. pilocarp. fl. 3 i, P.M., with free sweating, vomiting, and movement. Night of 28th and 29th, sinapisms for pain in lower back. During sickness tympanitis and nose-bleeding, coma-vigil and wandering.

October	28	29	30	31	Nov 1	2	3	4	5	6	7
Day	1	2	3	4	5	6	7	8	9	10	11
Pulse. { M.	90	80	90		5	80	80				
N.				85	80			65	65	75	
E.	90	95	90	85	85	85	80	85	75	70	70
Temp. { M.		101°. ₆	103°. ₆			103°. ₄	101°. ₉				
N.				103°. ₇	103°. ₈			101°. ₈	101°	100°. ₂	
E.	104°	104°	104°	103°. ₂	103°	103°	102°. ₅	102°	101°	100°. ₆	99°. ₆
Dejecta		1			1	1	2	1			1
V. v.		24	36	24	36	36	36	36	24	20	18

Convalescence immediate.

CASE 25.—Matthew V., age fourteen and a half; slender. "Not well for a week. Over-ate, five days ago." Nov. 23d, 8 P.M., chilly. R.: hydrargyri subchlorid. gr. iij. Tr. aconiti rad. gtt.j, half hourly till sweating. 24th, 9 A.M. perspired freely, and during night. Ol. ricini, \bar{z} ss. and tr. aconiti rad., P.M. R.: Hydrargyri subchlorid., gr. iss. Coma-vigil, etc.; unconscious of calls of nature much of the time during sickness. Tympanitis, *sordes*. A bad case; recovery hardly expected, emaciation extreme, bed-sores barely prevented.

November . . .	23	24	25	26	27	28	29	30	Dec. 1	2	3	4
Day	1	2	3	4	5	6	7	8	9	10	11	12
Pulse { M.		100	95	85	90	75	80	80	75	75	80	85
E.	110	110	90	80	90	80	80	90	70	80	85	70
Temp. { M.		104° .4	104°	103° .6	103° .8	102° .8	102°	102° .7	102° .6	101° .9	101° .9	102°
E.	104° .5	104°	104° .8	103° .5	103° .6	104°	102° .7	102° .8	102° .1	103°	102° .5	101° .7
Dejecta . . .		1	6	2		3	1	1	2	1	2	
V. v.		10	36	30	36	36	30	30	30	36	34	36
Calomel, gr. . .	3	1½	{ ol. ric. \bar{z} ss.									

CASE 25.—Continued.

December . . .	5	6	7	8	9	10	11	12	13	14	15	16	17
Day	13	14	15	16	17	18	19	20	21	22	23	24	
Pulse { M.	85	85	90	95	90	90	100	95	95	95		70	
E.	85	85	90	90	90	100	105	100	110	100	85		
Temp. { M.	101° .6	100° .7	101°	101° .7	100° .3	100°	101°	100° .7	100° .6	99° .4			
E.	101° .4	101°	101° .6	100° .7	99° .7	100° .1	101° .4	101° .2	101° .8	101° .1	100° .7	98° .1	98° .1
Dejecta . . .			1		1			1		2		1	
V. v.	36	30	24	20	16	16	24	30	30				
Tr. digitalis, gtt.			12	12	12	12							
Quinine, gr. . .				6	6	6	6						
Whiskey . . .			\bar{z} iss		\bar{z} iss	\bar{z} iss	\bar{z} iij	\bar{z} iij	\bar{z} iij	\bar{z} iij	\bar{z} iij	\bar{z} iij	\bar{z} iij
Calomel . . .			2	{ ol. ric. \bar{z} ss.									

Took his whiskey with milk. No delay of convalescence.

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CASE 26.—Mrs. G. widow, age forty-six; fat. Sept. 14, feverish for two days. R.: hydrargyri subchlorid.; gr. iij; tinct. aconiti rad., gtt. i, hourly, etc., for twenty-four hours. Pulse from 100 reduced to 90. Skin moist, coma-vigil, wandering during sickness, very weak. V. v.. gtt. 30 to 36, daily, from Sept. 16th to 24th, Pulse 80; temperature morning *and* evening, 104°, 103°, 102°, 100°. and 12th, or 13th day, 99° and convalescent.

CASE 27.—Miss L., age twenty-six, operative. Mill exposed to emanations of sewer-outlet, etc. Sept. 17th, rigors; not well for five days; four Brandreth pills, one dejection.

September . . .	18	19	20	21	22	23	24	25	26	27	28
Day . . .	1	2	3	4	5	6	7	8	9	10	11
Pulse { M.						90	95		90	90	80
{ N.	100		96	90	90			90			
{ E.			100	96				85	90	90	
Temp. { M.						102° .3	102°		101° .9	101° .6	100° .5
{ N.	103° .5		102° .7	102°	102° .3			101° .9			
{ E.			102° .5	102°				101° .5	101° .9	101° .4	
Dejecta . . .						1				3	
V. v.	18	24	24	24	24	24	24	30	36	30	20
										ol. ric.	
										3	
										ss	

CASE 28.—Wm. McCl., age twenty-five, sailor. Sick five days at sea. Sept. 25th, P.M., pulse 100, temperature 102°. Brought ashore. 26th, etc., pulse 80 ; temperature 102°, 102°.5, etc.,

V. v. daily, 30 and 36 drops, till Oct. 2. Diarrhœa 26th, 27th, and 28th. R.: hydrargyri subchlorid., gr. ij ; bismuth. subnitratiss, 3 ss ; pul. ipecac. gr. iss. ; morph. sulph., gr. i. m. Chart. xv. A powder three or four times daily, during diarrhœa. Oct 3d, convalescent.

